

## Central Delta Intakes Evaluation Issues

### Potential Facilities to be cost evaluated:

#### Elimination of SD Barriers

- Middle River
- Old River at DMC
- Grant Line Barrier

#### In-Delta Irrigation system

- Area below Old River and above Bryon Rd. and I-205
- Area around Payne's Slough
- Stewart Tract
- Fabion Tract
- Union Island
- West side of Upper Roberts Island
- West side of Middle Roberts Island
- Coney Island

#### Bacon Island Improvements

- Screened Diversion intakes (3 at 1333 cfs each)
- Levee improvements for storage
- Pump station to move water off island (or into isolated CCF connection)

#### Bacon Intertie

- Pump station on Bacon to move water off island
- 4000 cfs pipeline to CCF (including siphons under existing channels)
- Control structure at CCF to direct water to Tracy through channel or into CCF

#### CCF Intake

- 10 - 15 kfs Screened intake and fish collection facility
- Low head pump station

#### McDonald Island Intake

- Screened Diversion Intakes (3 at 1333 cfs)
- Conveyance system (pipeline or canal) to collect screened flows
- Pump station to move water into isolated canal to south
- Isolated channel to CCF with turnouts to island distribution system (including siphons under existing channels)

### Basic Questions to be addressed:

What South Delta diversions are impacted when the South Delta Barriers are not in place (existing conditions)?

- What is the cost of dredging and extending pump diversions in this area? (Are there annual dredging costs to consider?)
- Does SD water quality degrade with a lowering of the channel surface elevation?

Does Stage 1A make sense if we can't supply all SD diverters' needs from the isolated 1500 cfs McDonald Island Intake line (i.e. without including barriers, pump extensions, or dredging)?

At what central Delta diversion rate(s) are the South Delta water levels not significantly impacted (due to the change in point of diversion for Tracy or CCF)? Are barriers unnecessary at some point?

- Proposed model studies could include the following:
  - Quick study....Look at water level impacts of serving SD only from an isolated McDonald Island diversion (1500 cfs - no WQ modeling on this study) in lieu of from South Delta channels.
  - Look at 4000 - 5000 cfs connection from either Bacon (or McDonald) and supply directly to Tracy PP (or transfer through CCF Intertie). Assume SD diverters take water from adjacent channels, but they have no barriers in place. (See if there is a net improvement in water levels and how water quality changes)

### Effect on Fish (or "Is this alternative really more beneficial for fish?")

- Can we detect benefits to fishery impacts with the outlined staging (i.e. building)?
- Operationally, how can we achieve the most benefit for fish with this alternative?
  - Can switching intakes help significantly? Why?
  - Can limited storage help significantly? Why?
  - Can eliminating the barriers help significantly? Why?
- Are more fish (delta smelt especially) really in the central Delta or not?
  - Are they detectable?
    - Do we have any references on fish facility salvage (collection) compared to plankton net capture in the fish facility channels the might capture smaller lifestages that may slip through the louvers?
    - Do the past 20 mm surveys (indexes) in the central Delta adequately represent the density of smelt in the area compared to areas in the South Delta?
  - Is the center of smaller lifestage delta smelt in the Central Delta?

### Screened Intake Limitations

- Are we considering only "conventional" screen technology (3/32 openings and  $V_a=0.2$  fps)?
- What are the hydrodynamic conditions that will guide the number of diversion locations and flow rates around a CD intake? (we can look at channel flows around diversion locations...maybe even particle tracking...and determine if the CD intakes create a bathtub drain effect for extended periods).
- Would fish abundance or fish size trigger diversion changes between the CD or SD intakes? Or would we always want to take the first part of the flows from the CD?
- Are more fish potentially more vulnerable to intake entrainment at the CD location than in SD? Are fish more likely to be <20mm for longer periods of time in the CD? (For example, if more than say half of the fish exposed to the CD diversions are small larvae, are we better off? Maybe we could do a quick estimate on fish loss and compare it to another location that might have larger fish....?)
- What is the perceived tradeoff between a diversion that might see more fish exposed to its diversion for extended periods (even at a smaller size) and a diversion with fewer fish, but with a salvage facility associated with it? What will the criteria be to determine priority diversion use? (A fish salvage facility in the CD would likely be a fatal flaw, so we need to determine what max. CD diversion rate we would be comfortable with and how we decide to spread them apart.)

### Alternative Staging Ideas under the Same General Concept

1. Continue SDI program barriers program until necessary water levels are met.
2. Intertie to Tracy
3. Divert 4000 cfs (or more?) onto Bacon Island and use for EWA storage and delta releases.
  - Determine if TOC is an issue and mitigate by operations or lining island (?)
  - If TOC is problematic, then future isolated conveyance of storage water to Tracy would be necessary. Direct connect to intake without going into storage area also necessary.
4. Screen head of CCF with pump station (assumes that CCF storage pool is needed from future Bacon connection)
5. Connect Bacon Island to CCF via pipeline
  - Evaluate need for barriers and determine if other SD improvements are necessary due to change in some diversion from CD.
  - Instead of supplying SDWA land from another isolated diversion from McDonald, can we supply them from an enlarged CCF supply?
  - Can we buy out the SD islands and turn them into mitigation land?